

PROFILE OF CHILDREN ABUSED BY BURNING

Mathangi Ramakrishnan K., Mathivanan T., Sankar J.

Intensive Paediatric Burn Care Unit and Plastic Surgery, K.K. Childs Trust Medical Research Foundation and K.K. Childs Trust Hospital, Chennai, India

SUMMARY. In an analysis of paediatric burn admissions to a hospital in India during the years 1992-2007, 9.3% of burn injuries were found to be secondary to abuse. These had valid documented evidence and child neglect was excluded. This incidence of child abuse has been on the rise in the last seven years and was more evident due to careful investigation by a team comprising a plastic surgeon, a paediatrician, a legal expert, a psychologist, and a social worker. As with the incidence reported by many other researchers, most of the injuries were caused by scalding.

Keywords: abuse, children, burns

Introduction

This is a hospital-based retrospective analysis of 615 burn admissions to the specialized burns care facility of Kanchi Kamakoti Childs Trust Hospital, a tertiary care paediatric facility in India, between the years 1992 and 2007. Child abuse is defined as the intentional inflicting of burn injuries on a child aged 0-18 yr for various reasons by a perpetrator who is generally a child carer or a family member using, according to circumstances, hot liquids, corrosive acids, flame, and electrical appliances, and with definite proof of the incidence. The analysis was carried out by a team consisting of a plastic surgeon, a paediatrician, a legal expert, a social worker, and a psychologist. The facts that emerged have thrown light on the increasing incidence over the years. Important factors involved in the act include its occurrence in disturbed families, single parenthood, economic strain in families below the poverty line, and abuse of adolescents, particularly of female domestic workers.

Materials and method

The case records of 615 children were analysed and then categorized by aetiology, age, sex, site, place, time of the event, seasonal occurrence, type of perpetrator, means of abuse, mortality and morbidity, and the case report's special interest. The number of children abused increased over the 7-yr period. The histories as documented in the case records were noted. The cases were categorized as being due to abuse, neglect, or an accident. There were 66 cases of abuse.

Aetiology

Of the 615 cases considered, 66 (10.73%) involved

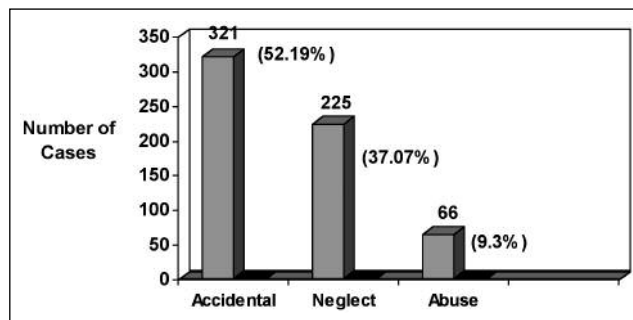


Fig. 1 - Aetiology.

child abuse, 228 (37.07%) were due to neglect, and 321 (52.20%) were accidental (Fig. 1).

Age distribution

Children in the age groups 6-10 yr and 11-15 yr were most commonly affected, with lower numbers in the 0-5 yr age group (Fig. 2).

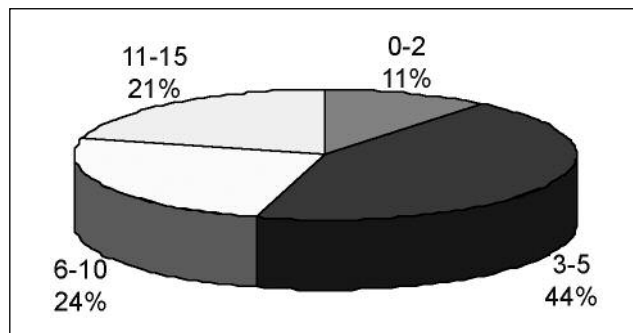


Fig. 2 - Age distribution.

Sex distribution

Female children were more commonly affected. Out of 66 children with burns due to abuse 47 (71.2%) were females and 19 (28.8%) were males (Fig. 3).

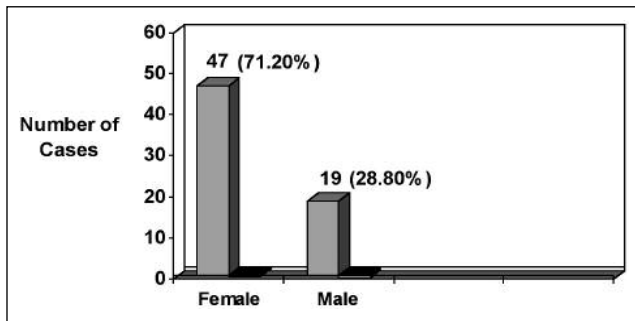


Fig. 3 - Sex distribution.

Distribution of burn site

In nine children (13.64%) the abuse was limited to one site, while in 57 children multiple sites were injured (Fig. 4).

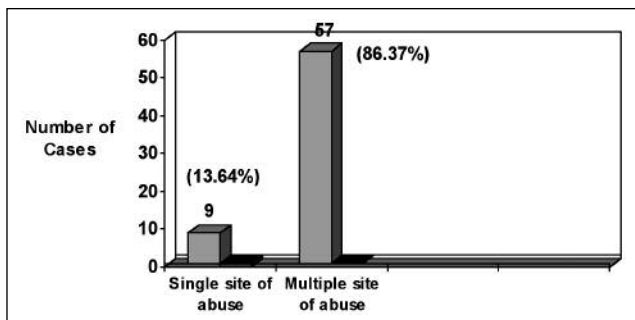


Fig. 4 - Site of abuse.

Place of occurrence of abuse

The abuse occurred in the home in 42 children (63.6%) while in 24 children (36.4%) it occurred at a neighbour's or an employee's (Fig. 5).



Fig. 5 - Place of abuse.

Time of occurrence

Most cases, i.e. 47 (71.21%), occurred during working hours (9 am - 5 pm), 17 (25.76%) between 5 pm and 10 pm, and a very small number, i.e. 2 (3.03%), at night (Fig. 6).

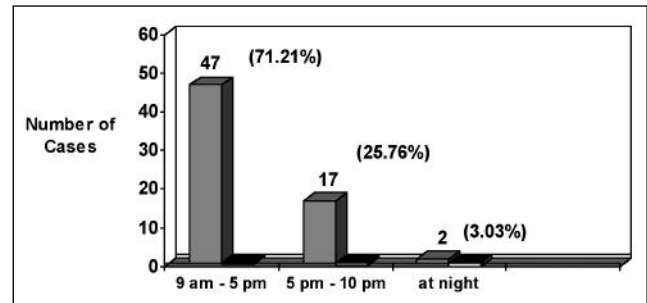


Fig. 6 - Time of occurrence.

Seasonal occurrence

Another interesting observation was that here in India most of the cases occurred during festival months: 38 (57.58%) in Oct./Dec. and 28 (42.42%) in Jan./Sept. (Fig. 7).

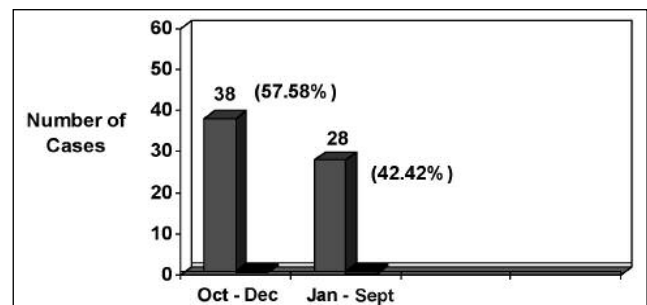


Fig. 7 - Seasonal occurrence.

Type of perpetrator

In a significant number of cases the perpetrators were carers (37 = 56.06%), followed by parents or members of disturbed families (25 = 37.88%); a very small number employers were involved (4 = 6.06%) (Fig. 8).

Methods of abuse

There were 47 children (71.12%) in this group. The liquids used were hot water, milk, curry, and hot oil. The areas usually affected were the face and abdomen. The total body surface area (TBSA) burned was always more than 20% and the depth of the burn was deep partial thickness.

Burns by corrosive liquids thrown by the perpetrator on exposed body parts occurred in three cases (4.6%), in

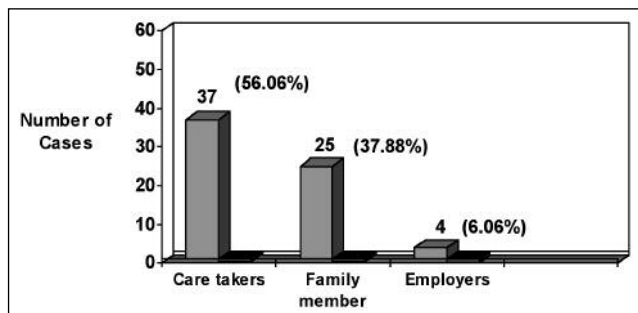


Fig. 8 - Type of perpetrator.

adolescents employed as domestic helpers. The motive behind the burn was either punishment for failure to wake up or non-compliance with sexual advances by the employer.

Flame burns were inflicted with a burning match struck in the face or thigh of the victim. There were 10 such cases (15.15%).

Abuse by contact with an electrical appliance occurred as a method of punishing children by placing the palm of their hand on a hot iron or by placing a warm electric water heater on a child's leg. There were six such victims (Fig. 9).

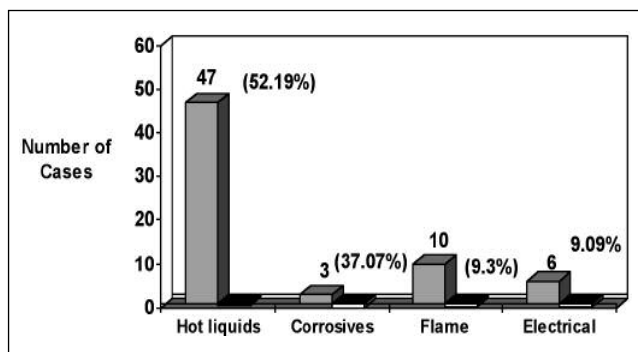


Fig. 9 - Methods of abuse.

Mortality and morbidity in relation to burn extent

Five deaths occurred in the group of 66 abuse cases. Of these five patients, four had a TBSA burned over 30% and one (18% TBSA) had deep acid burns in the face. Among the survivors those with superficial partial-thickness burns had mild scarring (27/66) and those with deeper burns (36/66) had hypertrophic scars which required reconstructive surgery (Fig. 10).

Increasing incidence of abuse over the years

The incidence has been increasing over the last few years, with more adolescent girls affected in recent years as part of sexual assault (Fig. 11).

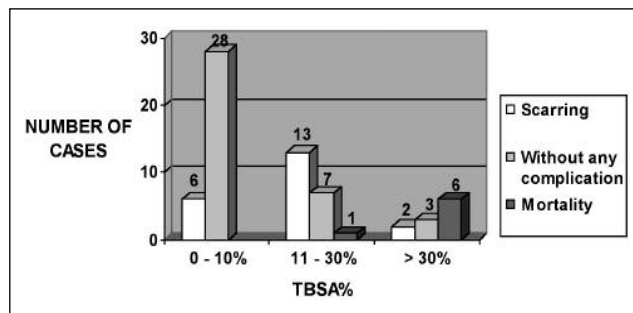


Fig. 10 - Mortality and morbidity.

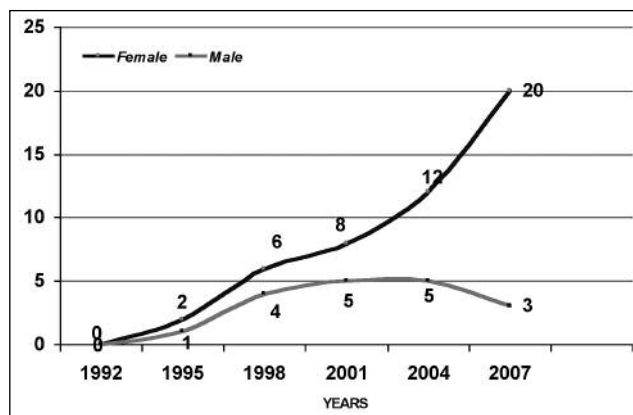


Fig. 11 - Increasing incidence of abuse over the years.

A neonate was dipped into hot water at birth while in the baby bath: the mother was HIV-positive and the perpetrator was a hired nurse in the delivery room, bribed by the mother-in-law. The child survived after treatment (Fig. 12).



Fig. 12 - Exceptional case report.

Discussion

Child abuse was first reported by Evans in 1955. Although general awareness of child abuse is increasing, abuse by burning is often unrecognized. We define child abuse by burning as the action of intentionally inflicting injuries on a child by burning.^{1,2} Nationally, approximately 10% of child abuse cases involve burning, and up to 20% of paediatric burn admissions involve abuse or neglect.³ The incidence in the present study was 9.3%. If the number of cases of burns due to child abuse is low it is due to underreporting, a low index of suspicion, or lack of proof. Ojo et al.⁴ reported that although the incidence of child abuse by burns was 4 to 39%, less than one half were substantiated. Ryan et al. from Canada reported an incidence of 1.4%.⁵ We had more cases secondary to scalds. Hot liquids like oil and curry were usually thrown on children. Ojo et al.⁴ and Montrey⁶ have reported cases due to hot tap water. Flame burns were also common in our study, with children made to walk on burning cinders as evidence of religious belief. Another cause of flame burns was kerosene oil, with an entire family committing suicide for social reasons, the children being burned first - such deaths are usually due to 100% burns. We had two such cases of death in this group. Burns due to contact with hot objects like the tips of lighted cigarettes were usually seen in adolescent girls subjected to sexual abuse. Ayoub and Pfeifer reported in their review that serious abuse as described above was an effect of predetermined aggressive attacks and needed close attention.⁷

Neglect is defined as a condition in which an accident is caused due to objects causing burns being kept in the vicinity of a child's play area by a carer who fully realizes that a child could be injured, for example by running and falling into hot water or curry kept on the floor in the kitchen.

Abuse with acid occurred in four of our cases in children over five years of age, of whom three were girls. In our series, acid-throwing into a boy's face occurred in a disturbed and impoverished family. Abuse in female children was common in sexual abuse in adolescent girls. Naidoo, analysing injuries among physical abuse victims, found that males were more commonly affected than females, unlike our study.⁸ Most of the cases involved children less than six years of age, unlike Bennett and Gamelli's report in which more cases were seen in children less than three years of age.⁹ In our study of the poorer strata of society, youngsters in the age group of 5-10 yr were sent out as domestic help. When these children played instead of doing domestic chores (e.g. house cleaning, washing clothes and vessels, etc.), they were burned on the leg or the palm of the hand as a mode of punishment. This was the reason for the increase in abuse in this age group.

Both boys and girls were involved in this age group. Rowe et al. in Brazil reported that in cases of multiple episodes of injuries one should suspect abuse as the cause.¹⁰ In the present study two children had multiple lesions which were found to be secondary to abuse. The perpetrators were usually the carers and hence the time of injury was between 9 a.m. and 5 p.m., when the parents were away at work. In two of our newborn victims the parents were the perpetrators: one child was a female infant who was HIV positive, the other a neonate abused by the father who suspected the mother of infidelity. Keshavaroz et al. reported that 4% of cases involved abuse by the mother, unlike our study.¹¹

As we have already said, even if general awareness of child abuse is increasing, abuse by burning often goes unrecognized.¹² The proof, evidence, and identification of the perpetrators are the key factors for confirmation of abuse.¹³ Rosenberg et al. in their study suggested that abuse should be suspected when the history was ambiguous, when there was a single parent, or when more than two sites were involved.¹³ Montrey et al. in their study reported an increased incidence of burns due to abuse in the younger age group.⁶ The commonest site involved was the buttocks and perineum, with hot tap water as the cause of burns.

Fire walking occurs during religious festivals in certain parts of India. Parents and carers take children in the age group of two to five years, leading the children by hand, and deliberately make them walk on fire. The proposed aetiology is that of unstable social conditions and chronic medical problems. Similar observations were made in the present study. There was usually a lag period between the act itself and reporting to the hospital. We found that 80% of the perpetrators were parents, step-parents, neighbours, or carers. The abused children were younger, had larger burns, and presented inconsistent injury mechanisms.

Abused infants and toddlers have a much higher mortality rate than unabused children.¹⁴ This high mortality indicates the seriousness and severity of non-accidental injuries and hence the demand for a thorough investigation of the medical, social, and emotional factors involved. There are correlations between the physical findings and the social characteristics, which may aid in the identification and treatment of children with burns. A multiplicity of injuries suggests that non-accidental burns are not a spontaneous abuse, but a planned form of aggression. The hallmarks of intentional burning include a story which does not explain the wound, previous or co-existent injuries, specific burn patterns, and characteristic behaviour of parents and children. The high mortality of the abused group indicates the seriousness and severity of non-accidental injuries.⁷ A team approach to child abuse with the addition of a specially trained group is important to en-

sure prompt recognition, more objective appraisals, and further follow-up. Child abuse tends to be repeated with progressively severe attacks, often ending in death.² Historically, these cases have been more difficult to prosecute than non-burn cases for multiple reasons. If the investigation is proved by court of law after a police enquiry, the perpetrator, if a care provider, gets a six-month prison sentence and has the right to bail, but will permanently not be permitted to handle children after release. If one of the parents is a perpetrator the child is taken care of in a care home run by the government and rehabilitated. The child is not allowed to live with the offending parents until the age of 18.

Our conviction rate of offenders is less than 30%. There are many psychological and social factors involved in handling burn abuse cases. However, with successful prosecution of such crimes, the victims tend to fare better both socially and psychologically.⁸ The victims of sexual assault or abuse are taken care of by the State social wel-

fare department or other voluntary organization and rehabilitated.

Conclusion

The incidence of child abuse due to burns was high (9.3%) in our study group. Scalds were the commonest type of injury and female children were more commonly abused than male children. Children below the age of ten years were abused mainly in the lower economic strata of society, where lack of financial resources is a common factor. The perpetrators were either parents or carers. Sexual abuse and burning were seen in female children in all age groups. There has been a steady increase in the numbers over the last seven years. We recommend that more aggressive efforts should be made to provide a secure and safe environment for these children and that the perpetrator, if identified, should be dealt with in such a fashion as to prevent recurrence of the offence.

RÉSUMÉ. L'analyse des hospitalisations provoquées par les brûlures en âge pédiatrique dans les années 1992-2007 dans un Centre indien a révélé que 9,3% des brûlures ont été jugées secondaires à des abus. Cette constatation était démontrée par des preuves documentées et on a pu exclure la négligence envers les enfants. L'incidence de cette catégorie de l'abus des enfants, qui est en hausse depuis sept ans, est devenue plus évidente grâce à une enquête minutieuse conduite par une équipe composée d'un chirurgien plastique, un pédiatre, un expert juridique, un psychologue et un assistant social. Comme pour l'incidence signalée par de nombreux autres chercheurs, la plupart des lésions ont été causées par l'ébouillement.

Mots clés: abus, enfants, brûlures

BIBLIOGRAPHY

1. Daria S, Sugar NF, Feldman KW, Boos SC, Benton SA, Ornstein A.: Into hot water head first: Distribution of intentional and unintentional immersion burns. *Paediatr Emerg Care*, 20: 302-10, 2004.
2. Phillips PS, Pickrell E, Morse TS: Intentional burning: A severe form of child abuse. *J American College Emergency Physicians*, 3: 388-90, 1974.
3. Ruth GD, Smith S, Bronson M, Davis AT, Wilcox RM: Outcomes related to burn-related child abuse: A case series. *J Burn Care Rehabil*, 24: 318-21, 2003.
4. Ojo P, Palmer J, Garvey R, Atweh N, Fidler P: Pattern of burns in child abuse. *Am Surg*, 73: 253-55, 2007.
5. Ryan CA, Shankowsky HA, Tredget EE: Profile of pediatric burn patients in a Canadian burn centre. *Burns*, 18(A): 267-72, 1992.
6. Montrey JS, Barcia PJ: Non-accidental burns in child abuse. *South Med J*, 78: 1324-6, 1985.
7. Ayoub C, Pfeifer D: Burns as a manifestation of child abuse and neglect. *Am J Dis Child*, 133: 910-4, 1979.
8. Naidoo S: A profile of the orofacial injuries in child physical abuse at a children's hospital. *Child Abuse Negl*, 24: 521-34, 2000.
9. Bennett B, Gamelli R: Profile of an abused burned child. *J Burn Care Rehabil*, 19: 88-94, 1998.
10. Rowe DS, Leonard MF, Seashore MA, Lewiston NJ, Anderson FP: A hospital program for the detection and registration of abused and neglected children. *N Engl J Med*, 282: 950-2, 1970.
11. Keshavaroz R, Kawashima R, Low C: Child abuse and neglect presentations to a pediatric emergency department. *J Emerg Med*, 23: 341-5, 2002.
12. Purdue GF, Hunt JL, Prescott PR: Child abuse by burning - an index of suspicion. *J Trauma*, 28: 221-4, 1988.
13. Rosenberg DA, Krugman RD: Epidemiology and outcome of child abuse. *Annu Rev Med*, 42: 217-24, 1991.
14. Durtschi MB, Kohler TR, Finley A, Heimbach DM: Burn injury in infants and young children. *Surg Gynaecol Obstet*, 150: 651-6, 1980.

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Address correspondence to: Dr Janani Sankar, Senior Consultant K.K. Childs Trust Hospital, 12A Nageswara Road, Nungambakkam, Chennai 600 034, India. E-mail: jananis_2000@yahoo.com